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ABSTRACT

Four speeches are presented, each of which deals with the use of computers to organize and retrieve news stories. The first speech relates in detail the step-by-step process devised by the "Free Press" in Detroit to analyze, categorize, code, film, process, and retrieve news stories through the use of the electronic film retrieval system, Miracode, designed by Eastman Kodak. The second speech discusses the idea of a regional newspaper library which would employ the paper tape used to produce a newspaper to index by computer that day's news stories and to provide a computer-produced microfilm for mounting in member papers' retrieval devices. The third speech discusses the Automated News Clipping, Indexing and Retrieval System (ANCIRS) which uses a minicomputer to control a very high speed microfiche retrieval terminal so that any piece of morgue copy is available to the viewer in approximately four seconds on the Image Systems terminal. The fourth speech concerns the development of a new, automated computer-assisted system, ACCESS, now in use by the "Chicago Daily News" and "Chicago Sun-Times" Editorial Library. (KKC)

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Newspaper Division Papers

SLA Convention

June 9-13, 1974

Toronto, Canada

Will Microfilm and Computers Replace Clippings?

Moderator

Homer Martin
Bergen Co. (N.J.) Record

Panel by

Alison Oppedahl
Detroit (Mich.) Free-Press

Jim Criswell
Rice University

Leon Bloom
Image Systems, Inc.

Janice Lewis
Chicago (Ill.) Sun-Times

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Miracode
by
Alison Oppedahl

Two years ago I appeared before this group and somewhat trepidaciously described a fledgling electronic film retrieval system which I had instituted at the Free Press. The system is now three years old and at the time we developed it, as far as I know, there was no functioning automated newspaper library in North America. Since that time the New York Times Information Bank has become operational, and the Louisville (Ky.) Courier-Journal, the Boston (Mass.) Globe, the Los Angeles (Calif.) Times, the Chicago (Ill.) Sun-Times and, I am sure, others, are implementing or considering implementing some form of automation. I would, therefore, like to describe our system as briefly as possible, tell you what three years of experience has taught us and mention what development we would like to see in newspaper library automation.

I would like to explain why we embarked so early on the hazardous course of automation. Four years ago, when I came to the Free Press, the library was undoubtedly in the worst condition of any major newspaper in the United States and probably in Canada. There were numerous misfilings, no standard subject headings and enormous losses from the files. We decided we would not incorporate this material into a new system because of the state of the clipping files and because various surveys, including our own, indicated that 90 percent of the use of clipping files was confined to the current two years. We then looked for a new approach and through a process of elimination we came to Miracode, an electronic film retrieval system designed by Eastman Kodak.

This system solved our space and loss problems, took care of subject headings and cross references and, best of all, was one we could afford. Kodak sells this equipment but does not design its applications. With the help of Jacques Fournier, then a consultant at the University of Ottawa, we designed the following system:

First, articles are selected by librarians from Detroit's two major daily papers, the Free Press and the News. The articles are then cut from the paper and attached to 8 1/2 by 11 inch sheets of paper using a waxing machine. Each sheet is coded with date and article number. Every name which appears in an article is noted on a numbered name card by date and article number. These cards are divided into corporate and personal name categories and filed alphabetically. (We are about to automate this procedure so that the names will be stored on discs and the librarians will use cathode ray tubes to find a name or add an entry.)

The articles are analyzed using a standard format called an analysis sheet. The article date and number are entered in the upper right hand corner. The author is listed and the main category is assigned. (All the material is divided into 19 main categories.) Main categories are general headings such as crime, politics, automobile industry, etc.

After a category has been decided upon, the actual analysis begins. Each term or name by which the article might easily be identified is listed as a keyword. For instance, terms used to describe an article about the

appointment of a commission to investigate possibilities for court reform would be: 1) court, 2) reform, 3) appointment, 4) commission and 5) names of those involved.

The analysis sheets are then coded numerically. A number is assigned to a term the first time it is used. From then on the same number is always assigned to that word and to its synonyms. We now have 7,000 key-words. We add new words whenever necessary and get a new printout once a month with the additions included.

The articles are filmed and the numbers which describe each article are implanted on microfilm through a keyboard. Each article is preceded by the codes which define it. The main difference between Miracode I, which I talked about two years ago, and Miracode II, which we now have, is found in this step. We now have direct keyboard input of codes.

With Miracode I, we had to generate punch cards and then feed them through a keypunch attached to the camera in order to implant the codes. Input is now much faster.

The film is sent out for processing and returned the same day. It is then divided into 19 categories and spliced onto the cassettes already containing these categories.

The film is now ready to be retrieved. If you are looking for an interview by David Smith with Henry Ford II in which he discussed his reaction to the new small luxury cars, you check the keyword list for the numbers assigned to each term and the byline list for David Smith's number. The numbers are then punched in the keyboard, the appropriate cassette is inserted into the machine and the search button is pushed. The article appears on the screen. If a copy of the article is required, the print button is pushed and a paper copy emerges. If you are looking for general information on gun control, the numbers for those two terms would be keyed in and the articles would appear in chronological order.

The other distinction between Miracode I and Miracode II appears at this stage in the retrieval unit. Miracode II has a dry process printer and solid state circuitry. The dry process means less chance of foul-ups because of chemical buildup inside the printer. Solid state circuitry means the machine can be repaired more easily and the keyboard is smaller, less complex and provides faster input.

We add about 110 articles each day. We clip only one copy of each article since the system provides cross indexing. We generally do not clip national and international news. It is possible to omit this material since about 90 percent of the stories generated by our newsroom are on local topics. Background for the other 10 percent comes mainly from the New York Times Information Bank.

The input requires four and a half people, three professionals and one and one half clerks. We do our own filming but not our own processing. We film every four days. The name cards give us access to much of the material while it is being processed. We also maintain manual byline files. The articles themselves are filed chronologically once they are filmed.

In addition, we are now gradually filming the old local name clipping files which are machine-retrievable only by name. We refer to this collection as the backlog. We are weeding most of the old national and international name files. Subject material is being left in the old files. The weeded material and the local name files which have been filmed are being donated to the Detroit Public Library. We are receiving a sizeable tax write-off for our generosity.

We did an analysis last month of 100 requests received by the library. Eighty-six were completed using Miracode. The remaining used backup systems, byline files, name cards or chronological files. Backup is most often used for material which is being processed and filmed i.e., articles from the last four days.

Of the 86 searches using Miracode, the average search time was 8.2 minutes. This included locating the requested material, selecting and making copies. Copies were made for 73 of the 86 searches; a total of 490 copies were made or 5.5 copies per search. The cost per copy is three cents.

Seventy-three searches were done in one category only, nine in two and four in more than two. After three years and two months, we have 202 cassettes representing approximately 100,000 articles. All this material plus 46 cassettes of backlog (the old clips) is housed in a unit measuring less than seven cubic feet.

The camera and retrieval units rent for $1,736 a month. We rented them for the first two years and then applied part of the rental to purchase. We now pay $1,500 for a service contract and about $3,000 for supplies and processing per year. The purchase price for the entire system is $39,590.

We conducted a survey recently to see what reporters and editors thought about the library. The response was favorable. There are still a few reporters who yearn for clip files to browse through, but the majority of the staff feels positive about getting the precise information they require. We do also provide material just for browsing, but because it comes out of a machine it is hard to convince a few people that it has the legitimacy of a yellowed clip file.

I think Miracode is a success partly because it is not the only service we provide. My excellent staff of six professional librarians and four clerks is an important factor. The librarians communicate directly with the reporters and find out as precisely as possible what they want. The librarians will search not only Miracode and the New York Times but reference works and periodicals in the library. They will also locate and arrange delivery of material from public and university libraries in the area. On occasion, they will even go to other libraries to do detailed research.

No matter how automated a library is the people who run it must be intelligent, cheerful, helpful and well-trained. This is particularly

essential when you are introducing a new system and have to convince reporters that it can and will work.

I hasten to add that we do not consider Miracode to be the final answer. We are always on the lookout for a better system at a reasonable price. We have learned quite a lot about what we would like in an ultimate system both from our experience with Miracode and from our use of the New York Times Information Bank.

We have examined the New York Times system closely because we have had a terminal for slightly over a year. The Info Bank costs between $1,300 and $1,600 a month, and we feel it is less responsive to our needs than our own system. We did a comparison search recently with some interesting results. We were searching for statements made by Henry Ford II during the last three years on the future of the small car.

Using Miracode, the keyword "small" was linked with Henry Ford's number and six pertinent articles were retrieved and copied in nine minutes. The New York Times does not have the facility to narrow such a search beyond combining Henry Ford with automobiles and the appropriate dates. Seventy-eight citations appeared. After reviewing these citations, three were noted as definitely relevant. The search itself took 15 minutes and the additional step of locating microfiche and making copies of the desired articles took another seven minutes.

Name searches are often done more rapidly by the New York Times than by our own system, but we would want the ideal system to have a highly flexible keyword approach and immediate access to full text and paper copies. We think the Image Systems approach you will be hearing about today sounds promising; so does the Ragen system. We fully expect that within the next few years an ideal system will be available.

Ultimately, we anticipate that Miracode will provide access to both old clippings and current material. Along with Miracode, we will have several computer terminals, some in the newsroom and some in the library, giving reporters and librarians direct access through names and keywords to the articles they require. The reporters will be able to do whatever searches they wish, but they will also have a trained staff who will do complicated and lengthy searches for them and provide the kind of coordinated and expanded library service I described earlier. In the meantime, we feel that Miracode handles our needs quickly and competently and that our newspaper will continue to benefit from its introduction.

Regional Newspaper Libraries
by
Jim Criswell

I would like to discuss with you today the idea of a regional newspaper library. It is not a new concept for newspapers to share libraries. Many of you work in libraries shared by competing newspapers and most of your papers subscribe to the Associated Press or other news services which share the news they gather.

Since the idea of sharing in a newspaper world is not foreign, what I propose should not be foreign either. I propose simply that several newspapers band together to share the computing, communication and other equipment and programs necessary to operate their libraries with on-line computer retrieval systems.

With the recent rapid advances in computing equipment, computers, memory terminals and telecommunications equipment a regional newspaper library is possible.

Each day at the Institute for Computer Services and Applications at Rice University we service users from all over the Houston area. These people use our computer by telephone. We sometimes have more than 20 people using the timesharing facilities at the same time.

On election night we had 10 terminals at three television stations and two newspapers getting results simultaneously as we computed them.

Regional newspaper libraries could provide 24-hour-a-day access to the files of each newspaper, produce the tapes needed to make microfilm copies of news stories and, at the same time, cut the operating costs.

In order to understand how a regional newspaper library might work, it is necessary to look at what newspaper libraries do with clippings now. Although there may be a few exceptions, basically each newspaper library marks, clips, files and eventually microfilms stories appearing in the paper.

Under our present systems, we are wasteful. Our wastebaskets are full of miles of yellow paper tape containing vital stories. Each day we take clippings from their envelopes and cut, paste or tape them down so we can microfilm them. These miles of paper tape could be--and should be--the input for our automated newspaper libraries. The same miles of paper tape could provide the microfilm we will create slowly but surely a couple of years from now.

I do not see how we can afford to be so wasteful any longer. And when your publishers understand the significance of this waste, I do not see how they will permit it.

How a Regional Newspaper Library Will Work

Each day or night after the last deadline, the paper tape used to produce that day's newspaper, or the magnetic tape copy of the paper tape,

will be sent by telephone line to the regional computer. This regional computer might be in the same town, or it might be miles away.

The data on the tape will be indexed automatically by the computer, using standards agreed upon by the member newspapers. For the moment let's assume that these standards are those developed by MIT, namely each important word in the first paragraph and all capitalized words in the story.

The stories and the index terms will be saved at this point until they can be reviewed and approved by the librarian or his marker at the member newspaper. In other words, the index terms will be edited by the markers at the paper.

This will allow them to keep our old favorite "City Hall is a cesspool" from being filed under sewers and that great lead on a Halloween column, "Boo," from scaring the computer to death. This edit phase will allow each newspaper to keep control over its own files at the same time as it takes advantage of the tireless efforts of the computer to underline and remember every capitalized word.

Meanwhile, the original tape will be further processed to make a new tape that will produce microfilm. This computer-produced microfilm, better known as COM, can be formatted in any form you like. It can look like the newspaper stories or it can look like the typewritten copy, a form that lends itself to packing lots of data on a page.

This COM tape will then be processed either at a service bureau or at the regional library to produce the microfilm.

This COM tape can have all kinds of index codes on it and can be formatted for fiche or roll film. Eventually, this microfilm could be housed in some kind of retrieval device.

Sufficient copies of the microfilm will be sent to the member paper for mounting in its retrieval device. The index as edited will contain pointers to the location of the microfilm on the retrieval device.

Turnaround time for this operation should be less than 24 hours, including delivery to the member newspaper. In Texas, in the banking business, material is received from out of town banks after 5 p.m. and the microfilm is delivered back before 8 a.m. the next day.

To use the system, reporters would sit down at a computer terminal and interrogate the file--which is a fancy computer phrase for "tell the computer what the hell they want." The computer will return a list of stories containing certain information, perhaps the date, page, byline, dateline and the indexed terms. If you want to get a little fancier, perhaps it would also type out the lead.

The computer would also printout a list of the locations where the stories appear on the microfilm file. Eventually, this list will go directly to the microfilm device and the reporter will see the first story

on the microfilm screen. By hitting a "go" button, he will see the rest of the stories that fulfill his requirements. Of course he will be able to make copies of whatever material appears on the screen.

Advantages of a Regional Newspaper Library

The biggest advantage of this system is that it will share the cost of equipment--and programming--over a number of users. Every newspaper in the country won't have to reinvent the wheel. In addition, the system will allow smaller newspapers and other media to have libraries and, if desired, to share in the information and the cost of securing the information of the large newspapers. It will create a most desirable data base that should be easy to market to libraries and industries in the region. The revenue from selling access to the index, copies of the index and copies of the microfilm should go a long way toward defraying the costs to the participating newspapers.

On the costs of equipment: It is interesting to note that retrieval programs such as we are discussing really do not require much of a computer's 'smarts.' These programs mainly require large amounts of storage. However, only big computers give access to large amounts of storage; in order to have a retrieval system, it is necessary to have a fairly large computer. Again, these programs will not take much time to run on a computer. But since they must be run on demand, they require a dedicated computer or a time-sharing computer.

A dedicated computer probably could not be cost justified and a timesharing computer again must be fairly expensive. However, the largest expense in automating the newspaper library will be in the development and maintenance of the software, the programs that tell the computer what it must do. As rapidly as computer technology changes, the maintenance of these programs will not be trivial tasks. For example, some available retrieval programs that would do a part of what you might need sell for $25,000. It is ridiculous for each large newspaper to spend this kind of money when the cost could be shared by many.

A system that captures each news story on microfilm almost as soon as it is created will probide more reliability. Somewhere there will always be a copy or a master copy of the film. The copy will not get ripped and it will not get misfiled.

Finally, if the member newspapers desire, the system will allow a greater interchange of information. As our lives become more intertwined with those of other people in our region, it becomes necessary for reporters to know more about certain people in other towns. Roundup stories on what's happening on taxes or mass transit would be easier to get with the background of what other papers have done.

We could set up the system so you could inquire of other papers about their stories and have copies of the stories sent to you.

Disadvantages of a Regional Newspaper Library

I see few disadvantages of a regional newspaper library. True, there may be several disadvantages to automating the newspaper library. Reporters do not like microfilm. They will not like talking to a computer that tells them they are dumb. But we are going to have these things, like it or not, in the next few years.

The only difference the region will add to these problems is a lack of control. Your computer will go down and the regional computer will go down. The only difference is who you kick to make it go again. Of course, there will be backup for both systems, but the chances of having real on-line backup, in other words, another computer, are greater when several people are sharing the costs.

The main thing is that there will have to be compromises, perhaps over the indexing algorithm, perhaps over what day of the week maintenance is performed, perhaps over a lot of little things. But you make compromises now in your newspaper life.

We at the Institute for Computer Services and Applications at Rice are very interested in the idea of a regional newspaper library. Dr. Stuart Lynn, our director, and I have been exploring ways to get such a project started. We feel that such an undertaking would fit in well with our organization and be beneficial to the news media of Texas, but as always there are problems concerning levels of funding available. We hope, of course, that soon we will be able to overcome these problems.

ANCIRS
by
Leon Bloom

The Automated News Clipping, Indexing and Retrieval System combines the use of a minicomputer to control a very high speed microfiche retrieval terminal so that any piece of morgue copy is available to the viewer in approximately four seconds on the Image Systems terminal.

The basic specifications for ANCIRS are the hardware and the software elements. The hardware consists of a Varian 620L/100 minicomputer, a magnetic disc, a nine track magnetic tape unit, a model 33 teletypewriter, the CARD console and the necessary controllers for the console.

The Varian 620L/100 minicomputer has a 16,000 word core memory. The magnetic disc can store at least 40 million bytes (groups of adjacent bits, the smallest unit of information in a computer, which are operated on as a unit and usually shorter than a word). The CARD consists of an electronically controlled CARL unit with print capability, a specially designed keyboard and a 32 position alphanumeric display. The CARD unit is a 48X unit with 300 frames per fiche and a 10" x 13" page size. The terminal holds up to 750 microfiche, with access time to any fiche a maximum of four seconds. Access to any frame on the same fiche averages less than .5 seconds. Assuming three clips per frame, the unit capacity is 675,000 clippings. The keyboard contains keys which perform six separate functions. The alphabetic section, which is like a typewriter keyboard, is used for the input of key words and any other required alphabetic data. The numeric section consists of twelve keys for entering line numbers, date, index numbers and any other numeric data. In the "upper case" mode, they are used to enter logical operators and parentheses.

The five keys in the paging control section are used for page skipping or advancement through multiple stories and for controlling paging either forward or backward.

The input control section is made up of eight keys whose functions are:

1.) clear entry
2.) backspace one character
3.) reset or start again
4.) select index list
5.) input mode
6.) search mode
7.) viewing mode
8.) shift to "upper case"

The software consists of two programs. The first of these is the off-line routines that prepare the data base and index. These programs are presently run on the Univac 1108. Using magnetic tape produced by input at the ANCIRS terminal, the off-line program organizes the data to generate several lists, which are placed on microfiche and used in the retrieval process. These include a permuted list of headlines and subject terms organized alphabetically by key words in the headlines and subject terms, a list of subject terms by major and sub-categories, a list of stories in chronological order and a list of subject terms in alphabetical order.

Also generated are an index tape, which is loaded into the minicomputer and used to access the indexes and the file, and a filming list used by

the camera operator when converting the 35mm film to fiche.

The second part of the software is the on-line routines. These programs are used for entering searches, viewing clippings and assigning subject terms. The on-line programs permit searching at the terminal using several approaches. The primary approach is to use key words as a means of accessing and selecting one of the lists from which the actual key words or phrases are selected. Entering the first few letters of a subject term results in the display of a page of listings containing that term. The list will either be a permuted list of headlines and subject terms organized alphabetically by key words in the headlines and subject terms, or a list of subject terms in alphabetical order. Selection of a specific term or set of terms is accomplished by keying in the line number or numbers of the desired terms when they appear on the screen. If a category heading is selected, the system will automatically display the subject term listings by category so that a more precise selection may be made. Input of a date will cause the chronological listing for that date to be displayed.

Searches by a logical combination of key words can also be accomplished. This is done by selecting terms from the list of subject terms in alphabetical order and combining them logically, using "and," "or" and "not" with other terms from that list. A range of dates may also be used as a logical operator. After each entry of search terms, the number of clippings which meet the criteria are displayed on the alphanumeric read-out. Once the operator has determined that the number is sufficiently low for viewing, the system may be switched to the "Viewing Mode."

When viewing clippings, once the viewing mode has been entered, the operator may quickly browse through the selected clippings by using the keys in the "Paging" section of the keyboard. At any time, the operator may return to the search mode to revise or start a new one. Use of the print control keys enables the operator to generate hard copy of a single page of clips or to automatically generate copies of all clips selected in the search.

To use the terminal to assign subject terms to new stories which are about to enter the system, the operator sets the console into the input mode. The technique is to key in the story identification number consisting of the date, section, page and sequence number, and follow this with a series of terms desired to be used as key words for the story. As the words are entered, the page containing the subject word listing, the list of stories in chronological order, is displayed. If the term is already in the system, entering the line number will assign the term to the story. If the term is not already in the system, the entry of the term must be completed and then assigned. The new terms will be accumulated and put on addendum fiche until such time as the entire index file is recreated. Selections for searching may be made from the main index file or the addendum index file.

The price of the initial ANCIRS system, including the minicomputer system, one CARD Console and the right to use all software, both on-line and off-line, is $100,000. More complete information will be furnished on request.

ACCESS
by
Janice Lewis

The search for a new system for the Chicago (Ill.) Daily News and Chicago Sun-Times Editorial Library was begun because of a multitude of insoluble problems. The Access Corporation of Cincinnati has been working with us to develop a new automated, computer-assisted system.

Our library is run around the clock and is staffed by 24 employes. We clip, classify and file the entire five editions of both of our newspapers, as well as one edition of the Chicago Tribune and the New York (N.Y.) Times and Wall Street Journal. We maintain a collection of approximately 3,600 book titles, 75 periodicals, four newspapers on roll microfilm, pictures, negatives and about 9,000,000 clippings.

When our two newspapers and their respective libraries were merged in 1960, hundreds of cartons of clippings were sent to a warehouse several miles away for storage. Each time that any of these clips are requested, someone must drive to the warehouse and dig through dusty boxes.

Several years ago our company bought microfilm equipment and attempted to film our backlog of clippings. The microfilming was done by several people in their spare time, which meant that new clips were produced faster than old ones were filmed, and we got farther and farther behind.

The inaccessibility of clips has been a serious problem, more serious than the shortage of space. Even as we needed more space, we had less because portions of the library were chipped away to add to other departments.

Additional problems of misfiling, sabotage by library employes and users, and competition between the two newspapers have meant poor file security and file integrity. Clippings can be removed from the library, and of course all of them are not returned. Human error is always a factor, and there have been known instances of materials being deliberately destroyed or hidden in order to avoid work. Sometimes a reporter will sit on clippings while waiting for a story to break, or both papers will want the same clippings at the same time, so that there is a multiple demand for a single source. A copier is available in the library. However, there is not adequate work space there, which necessitates a double trip from the newsroom in order to make copies.

Biographical clips comprise about 60 percent of those to be filed. To insure their being filed quickly and correctly, two of our best and most experienced classifiers are responsible for this job. We will be able to put their talents to better use once the new system is operative.

The majority of filing errors occur when requisitions are refiled, and this procedure will be eliminated with random storage and retrieval. With some of our slower filers, the turn around time for subject clips has been more than a week.

The Access System has been further refined and improved since I last reported to you at SLA in Toronto. We simultaneously tape recorded, weeded and reorganized our present files. As there is a list of headings contained in the collection, the classification of clips is often difficult, inconsistent, dispersed, unscientific and irretrievable. An extremely beneficial by-product of our preparation for automation will be a printed subject heading list, which will be used by our classifiers.

A survey of our editorial staff users indicated that when seeking information by way of newspaper clippings, they usually are in need of background material. A specific article was being sought less than 20 percent of the time by the majority of the staff. This means that a system which can only present isolated articles of a specific nature cannot adequately serve their needs. Therefore, we felt that it was important to group clippings by subject content, rather than by publication date.

We began to structure a hierarchical subject heading list for the organization of information contained in the clips. However, we soon realized that such a project was not only exceedingly difficult, but also unnecessary, considering the capabilities of the computer. The computer will now treat each main and subheading subject that warrants a file as a separate entry. Cross references input with each heading will enable us to link terms and locate one article or several stories of similar content.

We could access the entire inflation file; or the last two weeks of it; or all articles mentioning Nixon and inflation; all articles involving Nixon, Simon, and inflation; or the article by John Doe on Nixon, Simon, and inflation. The entire file will be on-line, so that the results of any of these searches can be viewed immediately on the CRT. Each search will provide an address and a locator which is an eye-readable heading, to facilitate finding that clip on the microfiche tab card.

The input of microfilm has been greatly reduced. We originally planned to insert an average of 1,000 microfilm images into the system daily, because of multiple filing. Under the changed system this figure will approximate 300 images. This triples the time span capacity of the storage module. We will save on the total cost of supplies needed, and the manpower requirement will be reduced.

Rather than slip-sheet 15 copies of our main editions and 10 each of the earlier ones, we will cut one entire paper from two copies of each edition. Each article will not be mounted, but placed in an 11 x 14 inch mylar folder. Each article will be accompanied by a preprinted form which has been completed by the cutter. The data on this form will provide the name of the newspaper, date, day of the week, section of the paper, page number, and edition for each paper. Space at the bottom of the form will be used by the indexer. A coder will then input each completed article into the system. A computer disc will store all of the on-line information to be incorporated into a cumulated printed index. The index will be sold in conjunction with our roll microfilm which is produced and marketed by Microfilming Corporation of America.

The next step will be to film the clippings, through the mylar jacket. The camera will contain the mechanism to provide eye-readable identifiers at the top of each image. The film will be processed in-house, and inserted into the appropriate jackets. The microfiche can then sit off to the side in extra cartridge drawers, called the buffer, until time to be filed. A search will call up the jackets in the buffer just as if they were inside the storage system.

As storage is random, filing is done by keying in each drawer from 00 to 99, removing those cards from the buffer, and placing them anywhere in that cartridge. The machine will not accept any microfiche that does not belong in that drawer.

Editorial staff members will receive a diazo copy of the microfiche requested, or a hard-copy printout. The end result is a system that can be responsive to either type of user's need, namely in-depth research or quick reference.

Another beneficial by-product will be the reorganization and redesigning of the entire library. We plan to provide isolated space for the indexers and a work area for the reporters. The equipment configuration will include a 100 unit storage module and keyboard, a CRT, one typewriter terminal, computer discs and magnetic tape, microfilm camera, film processor, quality control tester, two inserters, two reader-printers, portable readers, and a diazo duplicator.

The library staff is almost totally enthusiastic, because we will be able to do a much better job more easily. Most of the editorial staff has become receptive to these imminent changes, and our management has been exceptionally supportive and forward-thinking.

The system should be operative as of November 1, 1974. Our existing camera will be adapted to shoot 16mm film also. We will be able to film everything on a day forward basis with one camera, and selectively film some of the old clips with the other.

Question and Answer Period

Q. - How does the profit of the Chicago Sun-Times relate to the cost of the system?

Janice Lewis, Chicago (Ill.) Sun-Times:
I don't know--they told me I could have the system and I took it. I really have no idea what the profit is.

Q. - No, I didn't mean that. Is there an overall increase in the cost of the library? When you've finished terminating all these people, how do you come out economically--next year's budget versus this year's budget?

Lewis: They figure that the system would pay for itself over a period of, I think, seven years by cutting down not only on people but on certain supplies. We use some 150,000 clipping envelopes a year. So we would save the paper supplies for that and for the copier and the cost of personnel by the dropping of some jobs. I luckily didn't have to work out the finances; one of the financial people did that. The finances are not part of our regular budget--I managed that. This is something over and above the regular budget.

Q. - The cost is going to amortize itself over a period of seven years presumably, and then you'll have a continuing operating cost comparable to whatever your budget for the same operating costs is now.

Lewis: You mean, how much is it going to cost to run after it's paid for itself?

Q. - As the computer people in college libraries talk of it, they don't talk about reducing costs; they talk of normalizing the rate of inflation. The cost will go up.

Lewis: I understand what you're asking--I don't know. As a by-product we're going to get an index that we'll sell in conjunction with our roll microfilm and we hope to make some money from that. We also anticipate that there will be more sales of our roll microfilm when there's an index to it. Service is going to be so much improved that it will help balance the cost. In addition, we won't be losing all those clippings we can't replace. Also, we won't have the cost of paying warehouse storage and paying someone to go to the warehouse and get the material and bring it back.

Q. - Are there provisions concerning the people involved--for responsible reorientation, severance, or whatever?

Lewis: As I said, we would do this through attrition. We're not going to fire anybody or force anybody to move.

Homer Martin, Bergen Co. (N.J.) Record:
Are there any other questions? Yes, Catherine.

Catherine Heinz, Broadcast Pioneers Library:
Alison, as you know we have the Miracode file...(balance of question inaudible, some 35 seconds in length, but apparently it related to problem of files split because of people being important in two or more areas).

Alison Oppedahl, Detroit (Mich.) Free-Press:
Well, I should think that there aren't too many people with whom that happens. At this point you know where a person is. He's an established figure. If I were you, I'd make a decision that he would be a major category. For instance, we have the Wayne County District Attorney who's a very political figure. We put everything on him in the same category. If a clip of him is of major interest in another category we will film it twice. We don't find that's necessary often. Our categories are fairly mutually exclusive, but I would recommend a procedure like that. Make a decision and make it now before you get 500 clippings on a person. Put him somewhere--as I said, put him in the category where he is of major importance. If you have some stories in which he's of other interest, put them in the other place too, but have one central place for him. That should eliminate a lot of the problem.

Q. - (Inaudible question, evidently about the structure of the Miracode index.)

Oppedahl: It is simple to start with number one and go forever. That doesn't mean that when we have a story on a bank robbery that we don't use the term "bank" and the name of the bank and some kind of hierarchy. We can use the terms "crime" and "robbery." I'm not saying that we don't use a general term and a specific term to describe an article. All I'm saying is that there isn't a formal hierarchy where you have the major subject classification and then a whole lot of things down below them. We have specific words and general words describing stories; in that sense there is a hierarchy. We search by general term, or specific term or both.

Gayle Thompson, Miami (Fla.) News:
What do you do with names of organizations or community groups? We have some 7,000 key words.

Oppedahl: We also have.

Thompson: Well, what do you do with all the associations and organizations?

Oppedahl: We also have corporate name and personal name files with thousands of names in each. These files are based on a period of two years or so. They also have their own code. We have a card file which we are about to automate, and that's what I'm talking about--in that file are the names of organizations and people.

Thompson: So if you want to look up United Auto Workers, you have to first go and look on a card to find out what the number is and find out if it's filed under "A" or "U" or "W," or whatever words you want to put it under.

Oppedahl: We file the simplest way.

Carol Lindsay, Toronto (Ont.) Star:
Putting names in there is not simple. How do you file them?

Oppedahl: Names? We just use standard filing rules.

Lindsay: For such words as "national" or "American," don't you have a card file?

Oppedahl: Oh, yes. We have standard card files. That's what the coding is done with, with all the alphabetizing rules and everything else. (Last sentence of answer inaudible.)

Martin: Are there any other questions or comments?

Leon Bloom, Image Systems, Inc.:
I'd like to make a comment on the subject we were just talking about since I didn't have a chance to get into some of these things in our system. The name of a union was mentioned. I happened to notice that there were a few union entries in our system that turned up on the permuted list. For example, I had a John F. Henning who was the head of the California AFL-CIO. After writing that information down just one time, he ended up being sorted by "AFL-CIO," "Henning," and "California." So that he could be found under any of these terms with one entry. That's the kind of difference you have when you use a computer base to generate these index terms rather than having actually to make some decisions.

Martin: Are there any other questions or comments? O.K., thank you very much for coming.